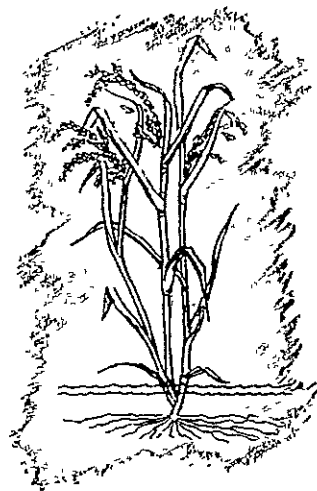


The Agricultural Development Council, Inc.

Report for 1966

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Report for 1966



The Agricultural
Development
Council, Inc.

630 Fifth Avenue, New York, N.Y. 10020

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The Council on Economic and Cultural Affairs, Inc., was founded in 1953 by John D. Rockefeller 3rd. It was incorporated as a private, non-profit organization under the laws of the State of New York.

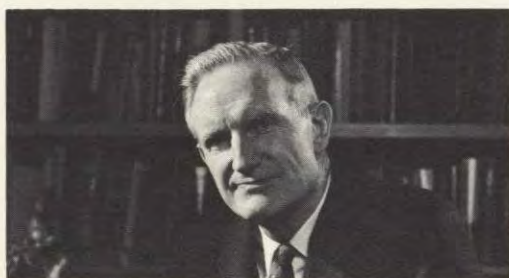
In 1963 the name was changed to The Agricultural Development Council, Inc., but the purposes remained unchanged from those stated in its original Certificate of Incorporation. In broad terms these are "charitable, scientific and educational and are designed to stimulate and support economic and related activities important to human welfare."

The Council supports teaching and research related to the economic and human problems of agricultural development, primarily in Asia. It draws its basic financial support from Mr. Rockefeller and the Rockefeller Brothers Fund. In addition, specific projects of the Council are currently supported by the Ford Foundation.

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Board of Trustees



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J. Norman Efferson



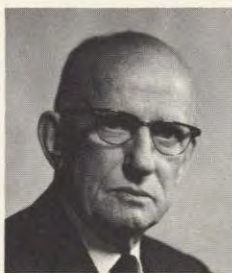
Lowell S. Hardin



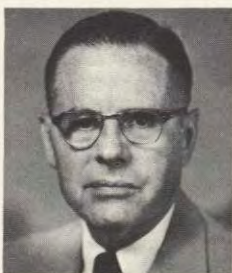
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Agricultural Economics
University of Minnesota
St. Paul, Minn.

John J. Scanlon
Vice President
American Telephone & Telegraph Co.
New York, N. Y.

William H. Sewell
Professor of Sociology
University of Wisconsin
Madison, Wis.

- 1) Resigned June 1966
2) Elected January 1967



Douglas W. Overton



M. B. Russell



Vernon W. Ruttan



John J. Scanlon



William H. Sewell

Officers

John D. Rockefeller 3rd, President
Raymond A. Lamontagne, Secretary
John J. Scanlon, Treasurer
Arthur F. McCormack, Assistant Treasurer
A. Russell Stevenson, Assistant Secretary

Finance Committee

John J. Scanlon, Chairman
Charles B. Newton
John D. Lockton

Staff

Arthur T. Mosher, Executive Director ⁽¹⁾
Clifton R. Wharton, Jr., Associate ⁽²⁾
Ardron B. Lewis, Associate
Abraham M. Weisblat, Associate
Howard W. Beers, Associate ⁽³⁾
Ralph H. Allee, Associate
Milton L. Barnett, Associate
Rainer Schickele, Associate
Herman M. Southworth, Associate
Melvin M. Wagner, Visiting Professor
John P. Hrabovszky, Visiting Professor ⁽⁴⁾
Raymond E. Borton, Specialist
A. Russell Stevenson, Administrative Officer
Sapfo Chacona, Accountant

1) On Sabbatical Leave, 1966-67

2) Acting Executive Director, 1966-67

3) Resigned June 1, 1966

4) Resigned July 1, 1966

INTRODUCTION

The personal approach to the human and economic problems of agricultural development which the Council has pursued since its founding paid high returns during the year 1966.

The personal involvement of staff members with institutions and individuals in their areas of operation has expanded greatly. And word of their work has spread in equal proportions. The Council, in addition to its United States program, is active in ten countries: Ceylon, India, Indonesia, Japan, Korea, Malaysia, Pakistan, the Philippines, Taiwan, and Thailand. Requests for assignment of staff members continually arrive from governments and institutions throughout Asia.

The Council gave its 222nd fellowship during the year. Sixty-six recipients of these are at present pursuing their studies. Former Fellows constitute an impressive body of alumni that is carrying out agricultural development work in positions of importance throughout Asia.

It is a measure of the Council's success over its near-fifteen years of work that every year staff members find that more and more of their colleagues in the countries in which they work are their former students, former Fellows who secured advanced degrees abroad or former recipients of research grants.

Of the Council's Fellows who have completed their study and are at work in their own countries, 84 are on the faculties of Asian universities, 41 are serving in some government agency concerned with agricultural development, 13 are with international organizations, and four are engaged in the private sector.

The Fellowship Program has helped increase both the number and quality of trained specialists working in this field, in many cases changing the nature of the Associates' assignments. On occasion the Council has worked itself out of a job, which is one of its goals—to help people do the job for themselves.

Council project grants in support of work in Asia have averaged about \$5,000. In many cases a grant meant that an individual was able to take

that important next step in his career and to increase his competence to help in solving his country's critical problems.

In-service training programs received a great boost with the publication of the book *Getting Agriculture Moving*, by Dr. Arthur T. Mosher, with its accompanying training manual, developed as part of a teaching materials project financed by a grant from the Ford Foundation. This simply written, non-technical outline of the elements of agricultural development is designed for middle-echelon technicians and officials who have been so immersed in their own immediate problems that they have had little opportunity of seeing the larger social and economic problems which the farmer and his family face, nor how they, the technicians themselves, relate to the overall development effort. Other volumes in this series are to appear in 1967.



Traditional method of transplanting rice in the Philippines.

The American Universities Research Program, also financed by a grant from the Ford Foundation, has, in its three years of operation, involved more than 400 American university faculty members in research and seminars on agricultural development in Asia, Africa, and Latin America. This has given the young American professor an opportunity for developing his professional competence in foreign agriculture and also has increased the number of trained specialists that can perform valuable services to underdeveloped areas and can be more alert to the special problems of foreign students in the United States.

The Council's success cannot be measured in terms of money spent, nor should it be. It is the colleague relationship which the Council has developed that is most important. As one astute observer* of the United States foreign aid program has said:

Where a mutually satisfying colleague relationship has been established a maximum of ideas have been exchanged, a minimum of material resources have been provided, and even the use of money has become more effective. It is no longer a contest between 'aider' and 'aided' as to who can outsmart whom with respect to amount and allocation of dollars . . . In the colleague relationship, money is used to support the implementation of ideas rather than to 'generate' ideas.

* Dr. Gelia Tagumpay-Castillo, Visiting Professor at the Department of Rural Sociology, Cornell University, 1966-67, from the College of Agriculture, University of the Philippines. From a paper, "A New Look At Old Concepts in Development: A Minority Report," presented at an international agricultural seminar at Cornell University.

ACTIVITIES OF THE STAFF

Dr. Lewis, stationed at Chung Hsing University, Taiwan, made several visits to universities and research institutes in Korea and Japan in connection with Council activities. At the College of Agriculture, Chung Hsing University, Dr. Lewis taught a regular graduate course on agricultural prices. The course was held during the spring semester and met for three hours each week. Ten of the students enrolled were candidates for M.S. degrees and five were seniors.

Dr. Lewis represented the Council at a seminar on agricultural development in Taipei in the course of the year. The seminar, sponsored jointly by the U.S. Government and the Taiwanese, was attended by 55 delegates from seven countries, including nine men who were former Council Fellows or recipients of travel or study grants. The purpose of the meeting was to search for the factors that had made a success of agricultural development in Taiwan, so that they might be reproduced in other countries.

On October 15, during ceremonies in commemoration of the twentieth anniversary of Seoul National University, Dr. Lewis was presented with a University Letter of Appreciation for his work in Korea as a Council Associate.



Professor Southworth addressing a class of agricultural economics majors at Seoul National University in Korea.

Professor Southworth from Pennsylvania State University and Dr. Lewis taught a summer course on Agricultural Marketing Research Methods at Seoul National University, College of Agriculture, Suwon, Korea. During an intensive five-week course 24 dedicated young men, 3 graduate students and 21 staff members of agricultural organizations concerned with agricultural development, learned to use new tools of analysis. The teaching staff also included Professor Young Kun Shim, who, under a Council grant, conducted a survey of rice marketing in Suwon, and two former Council Fellows: Professor Jin Hwan Park, who received his Ph.D. degree from the University of Minnesota, and Assistant Professor Sung Hwan Ban, M.S., also from the University of Minnesota, who also had made a survey of farmers' rice marketing.

The students analyzed and interpreted data from both Professor Shim's and Professor Ban's studies, the first intensive marketing surveys undertaken in Korea.

Dr. Wagner continued his assignment at the Faculty of Economic and Business Administration, Kasetsart University, Bangkok, Thailand. During the year he co-authored two articles with colleagues in the faculty. One was in collaboration with Udom Kerdpibul and dealt with some implications of the Thai business cycle, another, with Sopin Tongpan, analyzed the structure of Thai rice prices. In addition to assisting in the various current research projects at Kasetsart University, Dr. Wagner also taught a graduate course on research methodology in agricultural economics, and gave a series of lectures on agricultural economics at Chulalongkorn University.

Dr. Hrabovszky was active in the development program of the Division of Agricultural Economics at the Indian Agricultural Research Institute to which the Council made a three-year grant. This will be the key source of training for the large number of specialists needed to staff the twelve agricultural universities being created in India. In addition to teaching and doing research in farm management and land economics, Dr. Hrabovszky has been of particular assistance to former Council Fellows who are now on the staff of the Institute.

Dr. Barnett completed his fifth year in the Philippines prior to moving in December to Kuala Lumpur, Malaysia, where he is working on studies concerned with rural communities and the value and motivational patterns of rural people. While in the Philippines Dr. Barnett was associated with the Community Development Research Council as Consultant, and served as a Visiting Professor of Social Research and Anthropology in the Department of Anthropology and in the School of Education, University of the Philippines. During the year, Dr. Barnett continued his regular teaching and research commitments in the University as well as participating in a conference on the development of Latin American highland communities at Cornell University.

Dr. Schickele worked on the Council's Training Materials Program and brought the manuscript of his book on agricultural planning near completion. During the year he also prepared papers for two conferences—one at the Center for Agricultural and Economic Development at Iowa State University, and another for the Annual Conference of the Society for International Development. He also participated in a Latin American conference at Cornell University and the World Land Reform Conference in Rome.

Dr. Weisblat spent three months in the Philippines, where he had been stationed from 1963-65. During his stay in the College of Agriculture, University of the Philippines, Dr. Weisblat once again taught the Department of Agricultural Economics' graduate course on Comparative Land Tenure which he had previously developed and he continued to participate in the pioneering study of Filipino rice and coconut landlords. This study is being conducted by agricultural economists, rural sociologists, and agricultural education specialists in the College.

Dr. Allee continued his work as Consultant with the Bicol Development Planning Board in Southeastern Luzon, Philippines. The Council has been associated with the Board since its inception and is continuing its modest support. The Board has made considerable progress, has attracted national attention and seems likely to attract further financial aid. The Board was organized by the governors of six provinces in the region in order



A participant in the summer course on Agricultural Marketing Research Methods investigates a retail grain store in Suwon, Korea.

to accelerate its development. Seventeen agencies of the national government are cooperating, particularly in the exploration of regional and local agricultural development opportunities.

Consideration was given during the year to assigning Associates to Indonesia and Ceylon.

The Council had resident personnel in Indonesia from 1959 until 1965, and, for the past two years, the Council's overall agreement with the Government of Indonesia has continued in force. During the year, the Bogor Agricultural Institute continued to operate research projects financed by the Council—one each in agricultural marketing, credit, and capital formation. The Council grant for the Institute's experimental extension education project also continued and Dr. Allee made regular visits to Indonesia to provide technical backstopping for the program. Toward the end of the year a request was received from the Institute for the Council to locate resident personnel once again and the request is being seriously considered.

The Council has felt for some time that the current stage of development of the rural social sciences in Ceylon is propitious for the Council to station a resident social scientist and to initiate an expanded Council program. The Council has held favorable preliminary discussions with the College of Agriculture, University of Ceylon, on the possible assignment of a Council staff member to undertake this challenging task.

FELLOWSHIPS

During 1966, 26 new Fellowships were granted and 19 Fellows completed their studies and returned to strategic positions within Asian institutions and agencies. They have thus added to the number of trained teachers, researchers, and administrators to provide the leadership and professional skill that is required to effect greater agricultural development within their respective countries.

The Council assumed the entire administration of the program which had formerly been contracted out. The Administrative Officer is now responsible for such matters as visa sponsorship, visa and travel arrangements, arrangements for university admission, payments for maintenance, books, field trips and other allowances. This change has effected a significant saving in cost, thereby enabling the Council to provide study opportunities for a larger number of qualified candidates.

The Fellowship Program is under constant review by the Council, particularly with regard to the increasing opportunities for advanced study in Asian countries, where study opportunities and university facilities are

Preparing a rice paddy in Korea.



constantly improving. Eventually it will probably be possible to provide adequate training for Asian students on a regional or inter-regional basis. Meanwhile, the United States university will no doubt remain the best answer for advanced study. But even so, the training must be better tailored to the needs and problems of the Asian student.

Dr. Wharton's monograph, *The U. S. Training of Asian Agricultural Economists*, which was originally published in 1959, has been in wide demand and has proven a useful piece of literature for Council Fellows as well as other prospective students coming to the United States. During 1966 the Council started to bring this publication up to date. Dr. Stevenson has conducted an initial series of interviews as he has traveled to visit Council Fellows studying at U. S. universities. Early in 1967, Dr. Stevenson will pursue his survey in Korea, Japan, Taiwan, Thailand, the Philippines, and India.

Dr. Wagner with a group of graduate students at Kasetsart University, Bangkok, Thailand.



The following summary of the Fellowship Program indicates the status of the program as of Dec. 31, 1966.

| | M.S. | PH.D. | Non-degree | TOTAL |
|---|------|-------|------------|-------|
| Total No. of Fellows since beginning of program | 88 | 73 | 46 | 207* |
| Total No. of Fellowship grants since beginning of program | 88 | 88 | 46 | 222* |
| Total No. of Fellows who completed studies during 1966 | 7 | 9 | 3 | 19 |
| Total No. of Fellows studying as of Jan. 1, 1967 | 21 | 42 | 3 | 66 |

Position Upon Return

| | |
|---|-----|
| Government | 41 |
| College or University | 84 |
| International or regional organization | 13 |
| Private non-profit or commercial organization | 4 |
| Other | 7 |
| Cultural | 3** |

* The discrepancy between these first two figures is accounted for by the fact that some Fellows received awards for a second degree.

**Cultural awards are no longer given.

A complete listing of all Fellowships granted during 1966 will be found on p. 31.

GRANTS

Council grants during 1966 were awarded to people and organizations both in Asia and the U.S. totaling over \$500,000.

In Asia the Council made grants for five major research projects and ten minor ones plus several smaller grants for books and equipment. One of the important, and largest, grants of the year was to the Indian Agricultural Research Institute in New Delhi.

Beginning in 1963 the Council has been instrumental in helping to develop a Division of Agricultural Economics within the Institute. In order to meet the growing needs for trained specialists, in 1966 the Council made a grant of \$47,000 to do three things: (1) to improve the caliber of entering students by providing five special scholarships annually; (2) to improve the quality of instruction by employing visiting lecturers from other Indian universities; and (3) to provide a series of visiting scholars from among Indian agricultural economists who have recently completed their graduate studies abroad.

In the United States, thirty-four grants totaling \$223,883 were awarded by the American Universities Research Program, which is financed for a five-year period by a grant from the Ford Foundation. This program is designed to increase the involvement of American universities in research on international agricultural development in Asia, Africa, and Latin America and to increase the pool of social scientists in American universities trained in and knowledgeable about the problems of foreign agricultural development.

The grants made under this program during the year averaged \$6,600 and were for specific research projects.

A complete listing of all grants will be found on p. 29.

PUBLICATIONS

The year's most important development in the field of publications has been the near-completion of the Training Materials Program. This project, initiated in 1963 under a grant from the Ford Foundation, was intended to prepare materials for the middle-echelon workers in the field of agricultural development abroad.

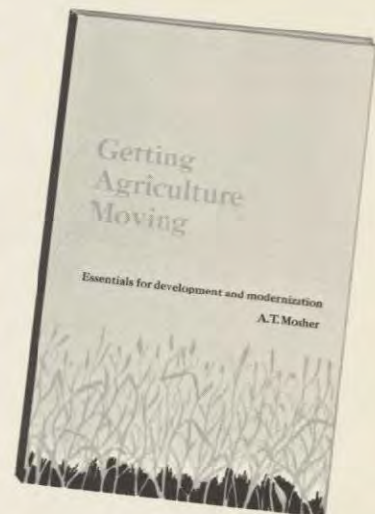
It provides training and reading materials designed to give the technician, often working quite alone in isolated areas, a sense of what is going on in other parts of the world in agricultural development, and also to give him an appreciation of his own role in this burgeoning field.

The year saw the publication of 47,000 copies of Dr. Mosher's book, *Getting Agriculture Moving*. Two paperback editions of 10,000 each have been printed, in addition to 2,000 hard-cover copies. The United States Information Agency has also published 25,000 copies in its inexpensive student edition format for sale through booksellers primarily in Africa, Asia, and Latin America. AID has sent copies to all its field missions and the International Agricultural Development Service of the U. S. Department of Agriculture is using the book with its trainees from abroad. The Food and Agriculture Organization of the UN is using it for training.

A companion piece, *Training Manual for Group Study of Getting Agriculture Moving*, also came out during the year. Two volumes of selected readings and a compilation of case studies, both edited by Dr. Borton, have been completed and will be issued in 1967.

These books, written in a simple and direct style, are being widely distributed all over Asia and Latin America. *Getting Agriculture Moving* is in process of being translated into Spanish, Portuguese, French, Arabic, Korean, Indonesian, Greek, Chinese, Thai, Malay, and Bengali. In addition, Franklin Books is considering the possibility of translation into other languages of countries where it has representatives.

A measure of the acceptability of these volumes is beginning to reach the Council from all parts of the world. A Council colleague in Taiwan, upon



first reading the books, commented:

It may be of interest for you to know that we have much the same experience in Taiwan regarding many of the questions you have discussed. For instance, what you call a 'package program' (which is a much better term than the one we have coined, 'integrated program') has helped our farmers here to increase their rice production by 34 percent and to do even better with other crops and hog production.

A professor of agricultural economics in Nova Scotia wrote that *Getting Agriculture Moving* was going to be adopted as a standard text for his eight-month diploma course and six-week certificate course, which together include over 150 students a year.

And a director of a university international program wrote feelingly: "We could sure use Spanish versions of it in the Dominican Republic right away."



A second book, *Agrarian Revolution and Economic Progress in the Developing World*, by Dr. Schickele, was nearing completion at the end of the year. Material for this volume, on the administration of programs for agricultural development, came primarily from Dr. Schickele's long experience as Chief of the Division of Land and Water Development of the Food and Agriculture Organization of the UN.

Another important part of the year's publication program was the commissioning of a series of monographs for use in the American Universities Research Program. In addition to Dr. Wharton's *Research on Agricultural Development in Southeast Asia*, which was published last year and is already out of print, six others have been commissioned and are nearing completion:

North Africa (Tunisia, Algeria, and Morocco)

West Africa (Ghana, Nigeria, Liberia, Gambia, and Sierra Leone)

East Africa (Uganda, Kenya, Tanzania, and Malawi)

Central America (Nicaragua, Honduras, Guatemala, Costa Rica, El Salvador, and Panama)

Brazil

The Middle East (Turkey, Syria, Lebanon, Jordan, Iraq, Iran, and Saudi Arabia)

The purpose of these monographs is to make as complete a survey as possible of all research being done in the area, the organizations involved, and the fields that are not being covered.

In addition, the Council published three Newsletters, three Papers:

"What Should Be the Role of the Social Sciences in a College of Agriculture" by Bryant E. Kearl

"Toward More and Better Food for the Filipino People and More Income for Her Farmers" by Richard Bradfield

"A Semi-Nomadic Farm Family" by N. S. Jodha;

and two Reprints:

"Management Decisions on Small Farms in Taiwan" by S. C. Hsieh

"Farm Management Research for Planning Agricultural Development" by Rainer Schickele.



SEMINARS AND CONFERENCES

A high point of the year was the meeting of Council Fellows held for four days during August at College Park, Maryland. Twenty-five Fellows (not including newly arrived ones who were occupied with summer orientation courses) attended: six from Thailand, five from the Philippines, three from India, two each from Pakistan, Malaysia, Taiwan, and Korea, and one each from Burma, Indonesia, and Japan.

Under the direction of five staff members (Drs. Barnett, Borton, Mosher, Stevenson, and Weisblat) discussion centered largely on two subjects: an examination of how the particular technical competence of each Fellow can be best integrated into the total effort of agricultural development in his home country, and the professional problems of returning home after foreign graduate study.

The Fellows were enthusiastic about the meeting and recommended that it be made an annual affair. It is evident that the Fellows feel a bond in their Council sponsorship and relationship, a bond they wish to retain after their return home. They discussed the possibility of regional conferences of former Fellows in Asia, and more frequent contacts with Associates in the field.

The American Universities Research Program sponsored seven seminars during the year, involving 170 men and women. They were held in all parts of the country and on a wide variety of subjects:

Problems of Land Settlement and Development in the Tropics
(University of Michigan)

Supply and Market Surplus Relationships in Peasant Agriculture
(University of Minnesota)

Industrialization and Agricultural Development (Stanford University)

Research Implications of Recent Developments in International
Agricultural Policies (University of Chicago)

Economic Aspects of the Development and Operation of Irrigation
Districts (Oregon State University)

Planning Agricultural Development: Three Case Studies—Iran,
Mexico, and Nigeria (Michigan State University)

Political and Social Movements of Rural People and Agricultural Development (University of Wisconsin)

In addition, a total of five workshops were held, including two in New York and St. Paul, on farm management research in developing areas. The other three were:

Implications for Research in Comparative Administration for Conduct for Programs in Agricultural Development (Harvard University)

Purchased Inputs: Fertilizer, Mechanization and Water Use (A/D/C New York)

Research on Agricultural Development in East Africa (University of Santa Clara, California)



The American Universities workshop on "Purchased Inputs: Fertilizer, Mechanization and Water use" in the A/D/C New York headquarters.

STAFF AND BOARD CHANGES

Two Board members resigned during the past year: Mr. Elliott and Dr. Hardin.

Drs. Russell and Ruttan were elected at the January meeting in 1967.

Dr. Mosher was granted sabbatical leave for one year, beginning September 1. He is studying at the University of Minnesota. Dr. Wharton, who had been directing the American Universities Research Program, was named Acting Executive Director.

Professor Southworth joined the staff as an Associate. His first assignment is at the College of Agriculture of Seoul National University in Suwon, Korea.

Associate Dr. Beers resigned in June to accept a position with the University of Kentucky. In July, Visiting Professor Hrabovszky resigned to go with the Food and Agriculture Organization of the UN in Rome.

Dr. Barnett, who has been Council Associate in the Philippines since 1962, transferred his headquarters late in the year to Kuala Lumpur, Malaysia, where he is associated with the Ministry of National and Rural Development to help establish a new research unit.



Attending a conference of Indian Fellows in New Delhi: clockwise beginning at bottom center, David W. Hopper, Rockefeller Foundation; Drs. Weisblat and Stevenson; Fellows P. Ray, S. B. Tambad, R. Ramanna, and T. V. Moorti.

STAFF BIOGRAPHIES

The Council's program is built around a career staff of Associates, Specialists, and Visiting Professors. All are trained in one of the social sciences and have had experience in agricultural development, much of it in foreign countries.

Associates are permanent Council employees and work out of the New York office or on assignment in the field. Each is a "working professional," engaged in teaching, consulting, and research in agricultural development.

Visiting Professors are on temporary assignments to a college or university to teach and do research in their particular disciplines.

ARTHUR T. MOSHER, Executive Director

APPOINTED: 1956
 EDUCATION: University of Illinois, B.S. (Agriculture) 1932; M.S. (Agricultural Economics) 1941; University of Chicago, Ph.D. (Economics) 1946
 FORMERLY: Acting Professor of Extension Education, Cornell University; Visiting Professor of Economic Development and Cultural Exchange, University of Chicago; Principal, The Allahabad Agricultural Institute, India
 AUTHOR: *Technical Cooperation in Latin American Agriculture*
Getting Agriculture Moving
 HEADQUARTERS: New York, N. Y.

CLIFTON R. WHARTON, JR., Acting Executive Director

APPOINTED: 1957
 EDUCATION: Harvard University, B.A. (History) 1947; School of Advanced International Studies, Johns Hopkins University, M.A. (International Affairs) 1948; University of Chicago, M.A. 1956; Ph.D. (Economics) 1958
 FORMERLY: Research Associate in Economic Development, University of Chicago; Staff member of National Planning Association project evaluating U. S.

technical assistance activities in Latin America; Head, Reports and Analysis Section, American International Association for Economic and Social Development

AUTHOR: *The U. S. Graduate Training of Asian Agricultural Economists*
Research on Agricultural Development in Southeast Asia
 ASSIGNMENT: Director, American Universities Research Program
 HEADQUARTERS: New York, N. Y.

ARDRON B. LEWIS, Associate

APPOINTED: 1956
 EDUCATION: University of Maine, B.S. (Animal Husbandry) 1928; Cornell University, Ph.D. (Agricultural Economics) 1933
 FORMERLY: Director of Technical Cooperation Program of the Inter-American Institute of Agricultural Sciences; Agricultural Office, Land Use, Food and Agriculture Organization of the U.N.; Specialist on China, Japan, Korea, Office of Foreign Agricultural Relations, U. S. Department of Agriculture; Agricultural statistician, Department of Agricultural Economics, University of Nanking

AUTHOR: *A Study of Land Classification in the Four Provinces of Anhwei, Kiangsi, Honan, and Hupei* (co-author)
Essential Steps in National Agricultural Improvement (co-author)
Land Classification for Agricultural Development

ASSIGNMENT: Japan, Taiwan, and Korea

HEADQUARTERS: Institute of Agricultural Economics
 Taiwan Provincial Chung Hsing University
 Taichung, Taiwan

ABRAHAM M. WEISBLAT, Associate

APPOINTED: 1958

EDUCATION: New York University, B.A. (Economics) 1939;
 University of Wisconsin, M.A., 1944; Ph.D. (Agricultural Economics) 1963

FORMERLY: Program Associate, International Training and Research Division, Ford Foundation; Study Director, Bureau of Agricultural Economics, U. S. Department of Agriculture; Instructor, Department of Agricultural Economics, University of Wisconsin

ASSIGNMENT: India, Pakistan, and Ceylon

HEADQUARTERS: New York, N. Y.

RALPH H. ALLEE, Associate

APPOINTED: 1960

EDUCATION: Pomona College, B.A. (Mathematics) 1927; Cornell University, M.S. (Education) 1940

FORMERLY: Director, Inter-American Institute of Agricultural Sciences; Head, Western Hemisphere Division, Office of Foreign Agricultural Relations, U. S. Department of Agriculture; Director, Macedonian Village Extension; Director, Albanian-American Institute; Director, Anatolia Rural Life Institute

ASSIGNMENT: Philippines and Indonesia

HEADQUARTERS: College of Agriculture
 University of the Philippines
 Los Banos, Philippines

MILTON L. BARNETT, Associate

APPOINTED: 1962

EDUCATION: Cornell University, B.A. (Chinese Studies) 1947;
 Ph.D. (Anthropology) 1952

FORMERLY: Professor of Anthropology, University of Wisconsin; Institute of Asian Studies, Syracuse University; Research Anthropologist, Consejo Bienestar Rural, Venezuela; Anthropologist, Payne Whitney Psychiatric Clinic

AUTHOR: *Problemas de los Recursos Economicos y Sociales en los Andes Venezolanos* (co-author)
Economic Adaptation of the Chinese in the United States
The Colorado River Indian Reservation Resettlement Program

ASSIGNMENT: Malaysia, Laos, and Thailand

HEADQUARTERS: Ministry of National and Rural Development
 Kuala Lumpur, Malaysia

RAINER SCHICKELE, Associate

APPOINTED: 1965

EDUCATION: University of Berlin, B.A. (Agricultural Sciences) 1928; M.S. (Agricultural Economics) 1929;
 Ph.D. (Comparative Economic Systems) 1931

FORMERLY: Director, Land and Water Development Division, Food and Agriculture Organization of the U.N.; Head, Department of Agricultural Economics, University of North Dakota; Professor of Agricultural Economics, Iowa State University

AUTHOR: *Agricultural Policy*

ASSIGNMENT: Training Materials Program

HEADQUARTERS: New York, N. Y.

HERMAN M. SOUTHWORTH, Associate

APPOINTED: 1966

EDUCATION: Cornell University, B.A., 1930; Graduate Study (Physics and Mathematics);
 Iowa State College 1938-41 (Agricultural Economics and Consumption Economics);

U. S. Department of Agriculture Graduate School 1940-43

FORMERLY: Professor, Agricultural Economics, Pennsylvania State University; Editor, *Journal of Farm Economics*; Assistant to the Deputy Administrator, Agricultural Marketing Service, U. S. Department of Agriculture; Bureau of Agricultural Economics, U. S. Department of Agriculture

AUTHOR: *Marketing Policies for Agriculture* (co-author)
Agricultural Development and Economic Growth (co-editor)

ASSIGNMENT: Korea

HEADQUARTERS: College of Agriculture
Seoul National University
Suwon, Korea

MELVIN M. WAGNER, Visiting Professor

APPOINTED: 1963

EDUCATION: University of Illinois, B.S. (Agriculture) 1954; M.S. (Agricultural Economics) 1962; University of California, Ph.D. (Agricultural Economics) 1966

FORMERLY: Agricultural Economist, Economic Research Service, U. S. Department of Agriculture

HEADQUARTERS: Faculty of Economics and Business Administration
Kasetsart University
Bangkok, Thailand

RAYMOND E. BORTON, Specialist

APPOINTED: 1964

EDUCATION: Cornell University, B.S. (Agriculture) 1954; Michigan State University, M.S. (Agricultural Economics) 1957; Montana State University, Ph.D. (Agricultural Economics) 1964

FORMERLY: Member, International Voluntary Services, Inc., in South Vietnam; Publications Editor, College of Agriculture, University of Connecticut; Editor, *International Agricultural Communications Digest*

HEADQUARTERS: New York, N. Y.



Associates Schickele and Southworth accompany the local Home Economics Extension Agent in Santo Domingo, in the Bicol region of the Philippines.

FINANCIAL STATEMENTS

BALANCE SHEET

December 31, 1966

ASSETS:

| | Combined | Operating Fund | Segregated Fund | Reserve Fund |
|--|--------------------|--------------------|--------------------|--------------------|
| Cash | \$ 49,479 | \$ 48,458 | \$ 256 | \$ 765 |
| Marketable securities at cost or market price at date of gift | 5,318,800 | 1,172,860 | 687,313 | 3,458,627 |
| Other assets (principally field staff advances) | 41,792 | 35,303 | 6,489 | |
| Interfund accounts | | (24,245) | 26,223 | (1,978) |
| | <u>\$5,410,071</u> | <u>\$1,232,376</u> | <u>\$720,281</u> | <u>\$3,457,414</u> |

LIABILITIES and FUNDS:

| | | | | |
|---|--------------------|--------------------|------------------|--------------------|
| Grants payable | \$ 36,337 | \$ 17,087 | \$ 19,250 | |
| Fund balances* | <u>5,373,734</u> | <u>1,215,289</u> | <u>701,031</u> | <u>\$3,457,414</u> |
| | <u>\$5,410,071</u> | <u>\$1,232,376</u> | <u>\$720,281</u> | <u>\$3,457,414</u> |
| Securities priced at market at end of year amounted to | <u>\$6,241,292</u> | <u>\$1,178,900</u> | <u>\$693,662</u> | <u>\$4,368,730</u> |

* Fund balances include appropriation commitments as follows:

Operating Fund, \$8,863; Segregated Fund, \$21,300; Reserve Fund, \$5,000.

See notes to financial statements.

STATEMENT OF CHANGES IN FUNDS
for the year ended December 31, 1966

| | <i>Combined</i> | <i>Operating Fund</i> | <i>Segregated Fund</i> | <i>Reserve Fund</i> |
|---|--------------------|---------------------------|----------------------------|-------------------------|
| Balance, January 1* | \$5,215,496 | \$1,236,510 | \$ 549,794 | \$3,429,192 |
| Grants and gifts received: | | | | |
| Ford Foundation | 570,000 | | 570,000 | |
| Rockefeller Brothers Fund | 300,000 | 300,000 | | |
| John D. Rockefeller 3rd | 349,700 | 349,700 | | |
| Gain or (loss) from sale or redemption of securities | 21,140 | (7,082) | | 28,222 |
| Interest and dividends (Note 3) | 211,565 | 178,396 | 33,169 | |
| Other additions (deductions) | <u>5,223</u> | <u>5,438</u> | <u>(215)</u> | <u></u> |
| | <u>6,673,124</u> | <u>2,062,962</u> | <u>1,152,748</u> | <u>3,457,414</u> |
| Program expenditures: | | | | |
| Direct | 1,117,042 | 727,148 | 389,894 | |
| Administrative and other expenses | <u>236,310</u> | <u>165,417</u> | <u>70,893</u> | |
| | 1,353,352 | 892,565 | 460,787 | |
| Refunds of prior years' appropriations | <u>53,962</u> | <u>44,892</u> | <u>9,070</u> | |
| | <u>1,299,390</u> | <u>847,673</u> | <u>451,717</u> | |
| Balance, December 31* | <u>\$5,373,734</u> | <u>\$1,215,289</u> | <u>\$ 701,031</u> | <u>\$3,457,414</u> |
| * Beginning and ending balances include appropriation commitments as follows: | | | | |
| Beginning | <u>\$ 30,160</u> | <u>\$ 12,271</u> | | <u>\$ 17,889</u> |
| Ending | <u>\$ 35,163</u> | <u>\$ 8,863</u> | <u>\$ 21,300</u> | <u>\$ 5,000</u> |

See notes to financial statements.

Accountants Opinion

LYBRAND, ROSS BROS. & MONTGOMERY
Certified Public Accountants

March 30, 1967

Mr. John D. Rockefeller 3rd, President,
The Agricultural Development Council, Inc.,
630 Fifth Avenue,
New York, N. Y. 10020

Dear Sir:

We have examined the balance sheet of

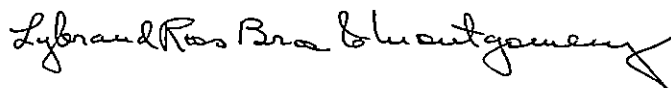
THE AGRICULTURAL DEVELOPMENT COUNCIL, INC.

as of December 31, 1966 and the related statement of changes in funds for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

Expenditures incurred which pertain to activities related to more than one section of the Council's program are charged to administrative and other expenses. The total of these expenses is then allocated by the Executive Director at the end of each year on the basis of the estimated share pertaining to each section of the Council's program. While we have no reason to believe that such allocations are other than fair, the basis on which they were made is not one which can be substantiated through audit procedures and, accordingly, we are not in a position to render an opinion on the allocation of administrative and other expenses.

Except for the allocation of administrative and other expenses described in the preceding paragraph, in our opinion, the financial statements previously mentioned present fairly the assets, liabilities and fund balances of The Agricultural Development Council, Inc. at December 31, 1966 and the changes in funds for the year then ended, on a basis consistent with that of the preceding year.

Very truly yours,
Lybrand, Ross Bros. & Montgomery



Notes to Financial Statements

1. In common with the practice of many non-profit institutions, The Agricultural Development Council, Inc. does not capitalize furniture and equipment or accrue interest or dividends.
2. The Segregated Fund is maintained to account for funds received by the Council for specific purposes, and/or to be used over a designated period of years. Funds so segregated are not considered a part of the Council's Operating Fund.

At December 31, 1966, the Segregated Fund consisted of grants from the Ford Foundation for use in connection with (1) a research and training program to develop American agricultural competence in other countries, and (2) the collection and dissemination of training materials relating to agricultural development.

3. Interest and dividends received from Reserve Fund investments were transferred to Operating Fund.

LIST OF GRANTS 1966

| | |
|--|--------|
| Biblioteca Bogoriensis, Bogor, Indonesia. Toward the study of libraries and documentation centers in Europe by Mrs Pauline Sahertian Bakhoven | \$ 500 |
| Chonnam National University, Kwangju, Chollanam-do, Korea. Supplement for a field survey on farm business for improving farm management in the Kwangju area by the Department of Farm Management, in cooperation with the Rural Development Institute and the Chonnam Provincial Office of Rural Development under the direction of Professor Pil Kyu Lee..... | 1,126 |
| Fund for the International Conference of Agricultural Economists, Inc., Chicago, Illinois. Toward inter-conference budget for the year 1966..... | 5,000 |
| Indian Agricultural Research Institute, New Delhi, India. In support of a three-year program to strengthen the Division of Agricultural Economics | 47,000 |
| International Association for Agricultural Economics, Tokyo, Japan. Toward costs of publishing <i>Rural Economic Problems</i> , an English language journal of agricultural economics .. | 1,501 |
| Supplementary grant. Terminal grant to cover publishing deficit | 3,750 |
| Kasetsart University, Bangkok, Thailand. To provide administrative assistance for Dr. Wagner in Department of Agricultural Economics | 1,287 |
| Kyoto University, Kyoto, Japan. In support of third year of research and extension in farm management, regional planning and local agricultural policy | 3,351 |
| Kyushu University, Fukuoka, Japan. In support of two-year study by Department of Agricultural Economics of land classification and type of farming in the Chikugo Plain area of Kyushu | 4,000 |
| Obihiro, Zoototechnical University, Obihiro City, Hokkaido, Japan. In partial support of a research project on the determination of replacement time and investment priority for long life equipment, especially tractors, by Dr. Tadashi Tenma | 530 |
| Institut Pertanian Bogor, Indonesia. In support of a study of capital formation in peasant agriculture in West Java..... | 2,259 |
| University of the Philippines (Community Development Research Council). Ethno-ecological study for Jama Mapun of Cagayan de Sulu by Mr. Eric Casino, of the National Museum..... | 257 |

| | |
|---|-------|
| University of the Philippines (Community Development Research Council). In partial support of a research project on decision making among farm families in Santor, Batangas by Mrs. Sylvia Guerrero | 218 |
| Seoul National University, Suwon, Korea. Research on marketing of rice in the Suwon area by Y. K. Shim, Department of Agricultural Economics..... | 2,858 |
| Seoul National University, Suwon, Korea. In support of third year of a study of cooperative farms on reclaimed mountain lands by Professor M. S. Kim, Head of the Department of Agricultural Economics..... | 1,107 |
| Seoul National University, Suwon, Korea. Support of a National summer course in agricultural marketing research at the College of Agriculture | 2,960 |
| Seoul National University, Suwon, Korea. In support of a research project on marketing of rice in the Suwon area by Professor. Young Kun Shim, Department of Agricultural Economics | 2,426 |
| Selected institutions. For books, periodicals and equipment. | 1,188 |

AMERICAN UNIVERSITIES RESEARCH PROGRAM GRANTS 1966

| | |
|--|----------|
| Brandeis University, Richard S. Weckstein (Department of Economics)—A Comparative Evaluation of Three Types of Mexican Land Reform | \$ 1,965 |
| University of California, Davis, Chester O. McCorkle (Department of Agricultural Economics)—Agriculture's Role in the Process of Economic Growth—The Argentine Case..... | 14,315 |
| University of California, Berkeley, Dale W. Jorgenson (Department of Economics)—Labor Allocation in Agricultural Development..... | 3,502 |
| Supplemental Grant | 12,040 |
| University of Colorado, Donald D. McPhail (Department of Geography)—Regional Land Systems of Chile | 9,475 |
| Cornell University, Donald F. Sola (Division of Modern Languages)—Analysis of UNESCO Procedures in Implementing U. N. Literacy Program in Africa | 2,500 |
| Cornell University, William F. Whyte (School of Industrial & Labor Relations)—Industrial Routes to Agricultural Development: A Pilot Project in Peru | 10,600 |

| | | | |
|--|--------|---|-----------|
| Florida State University, Morton D. Winsberg (Department of Geography)—The Diffusion of Purebred Cattle in Argentina: An Example of the Spread of Cultural Innovation..... | 600 | University of Oregon, Carl J. Johannessen (Department of Geography)—Crop Selection and Planting Techniques Used in the Domestication Process by Subsistence Farmers (Costa Rica) (Supplemental)..... | 6,000 |
| University of Georgia, Wilfred C. Bailey (Department of Anthropology)—Social Factors Related to Agricultural Development in a Spanish Village | 7,200 | Pennsylvania State University, Frederick C. Fliegel (Department of Rural Sociology)—Farmers' Perceptions of New Practices and the Possibility of "Message Distortion" as Degree of Contact with Formal Information Sources Decreases (India)..... | 5,980 |
| University of Georgia, John C. Belcher (Department of Sociology and Anthropology)—Determinants of Level of Living in Rural Puerto Rico..... | 12,035 | Queen's University, Jayant K. Lele (Department of Political Science)—The Rural Political Process and Socio-Economic Development: A Case Study in Maharashtra, India | 6,710 |
| Harvard University, Dwight S. Brothers (Center for International Affairs)—Mexico's Agricultural Problem: Dimensions and Policy Alternatives..... | 5,350 | Stanford University, Charles O. Frake (Department of Anthropology)—Inter-Community Communications Among Moslems and Christians in the Southern Philippines..... | 2,500 |
| University of Hawaii, Edward Ross (Department of Food Science and Technology)—A Survey and Analysis of Information Oriented to Food Products and Processes as They Relate to the Agricultural Development of Pacific Rim Countries (Supplemental)..... | 250 | Stanford University, Merrill J. Bateman (Food Research Institute)—Supply Functions for West African Cocoa and Centralized Marketing of Exports | 3,197 |
| University of Illinois, Stephen C. Schmidt (Department of Agricultural Economics)—Arab Economic Integration | 11,500 | University of Texas, Robert C. Mayfield (Department of Geography)—Simulation of Innovation Diffusion in Indian Agriculture..... | 2,400 |
| University of Iowa, David H. Andrews (Department of Sociology and Anthropology)—The Conceptualization of the Earth's Surface in Three Geo-cultural Areas..... | 1,887 | Vanderbilt University, Gian S. Sahota (Department of Economics)—The Econometrics of Indian Agriculture. An Analysis of the Supply, Demand, and Price of Fertilizer in India .. | 3,750 |
| Iowa State University, Donald R. Kaldor (Department of Economics)—Impact of Industrialization on Agricultural Development and Income Distribution in "Congested" Rural Communities of Western Ireland | 9,250 | Washington University, John W. Bennett (Department of Sociology and Anthropology)—Planning for Comparative Studies of Agricultural Cooperation (Israel, South Asia and Japan) | 1,500 |
| University of Maryland, John R. Moore (Department of Agricultural Economics)—Planning India's Agricultural Export Sector: A Case Study..... | 2,100 | University of Wisconsin, Richard Day (Department of Economics)—Dynamic Analysis of Agricultural Production in an Underdeveloped Country: A Case Study of the Punjab, India..... | 9,977 |
| Michigan State University, John M. Hunter (Department of Economics)—The Effect of Highway Improvements on Agricultural Productivity: An Argentine Case Study | 9,550 | University of Wisconsin, Robert C. Clark (Department of Rural Sociology and Extension Education)—Factors Associated with the Acceptance or Non-Acceptance of Selected New and Improved Farming Practices by Village Farmers in the Western Region of Nigeria | 5,625 |
| University of Michigan, Gayl D. Ness (Department of Sociology)—Cuba, Puerto Rico, and the Philippines. A Comparative Analysis of Spanish and American Colonial Influence on Modern Agricultural Development | 10,825 | University of Wisconsin, Eugene A. Wilkening (Department of Rural Sociology)—Reliability and Comparability of Measures Relating to Change in a Rural Area of Brazil | 7,325 |
| University of Minnesota, Philip M. Raup (Department of Agricultural Economics)—Interaction of Land Use and Land Tenure in Agricultural Development: A Comparative Analysis of Greece and Tunisia | 6,085 | University of Wisconsin, William Loren Flinn (Department of Rural Sociology)—Background and Adaptation of Rural to Urban Migrants: A Colombian Case..... | 2,450 |
| University of Missouri, Herbert F. Lionberger (Department of Rural Sociology)—A Study of Farm Information Disseminating Systems and Channels for Communicating Scientific Farm Information in Taiwan..... | 15,975 | | |
| Montana State University, William R. Lassey (Department of Agricultural Economics and Rural Sociology)—Communication Behavior and Decision-Making in the Agricultural Development of Traditional Communities (Guatemala) (Supplemental)..... | 15,000 | SPECIAL PROJECTS, 1966 | |
| State University of New York College, New Paltz, Joan M. Campbell (Division of Behavioral Sciences)—Culture as a Variable in Directed Agricultural Change in East Africa..... | 2,600 | American Universities Field Staff, New York. General corporate purposes.. .. . | \$ 10,000 |
| State University of New York at Buffalo, John S. Hauptert (Department of Geography)—An Appraisal of the Projected Regional Center of Besor in Israel's Negev Desert..... | 1,865 | India International Centre, New Delhi, India. Continuation of a program grant..... | 10,006 |
| | | English Language Educational Council, Inc., Tokyo and the Japan Society, Inc., New York. Support program for the teaching of English in Japan | 196,000 |

LIST OF FELLOWSHIPS 1966

GRADUATE DEGREE

India

Raghubir SINGH, Instructor, Department of Agricultural Economics, Punjab Agricultural University, Ludhiana. Ph.D. studies in Extension Education at the University of Wisconsin.

Malaysia

CH'NG How Soo, Agricultural Officer, Department of Agriculture, Temerloh, Pehang. M.S. studies in Extension Education at the University of Wisconsin.

CHUNG Choeng Hoy, University of Malaya. M.S. studies in Agricultural Economics at the University of Wisconsin.

MOKHTAR bin Tamin, Department of Agriculture, Alor Star, Kedah. M.S. studies in Agricultural Economics at the University of Minnesota.

YEOH Oon Lee, University of Malaya. M.S. studies in Agricultural Economics at North Carolina State University.

Pakistan

Saiyed Mehdi Haider RIZVI, Assistant Professor, College of Agriculture, University of Peshawar, Peshawar. Ph.D. studies in Agricultural Economics at Pennsylvania State University.

Philippines

Aida RECTO, Research Instructor, Department of Agricultural Economics, University of the Philippines, College, Laguna. Ph.D. studies in Agricultural Economics at the University of Minnesota.

South Korea

Kyoo Soo HAN, Research and Statistics Section, Agricultural Administration Bureau, Ministry of Agriculture and Forestry, Seoul. M.S. studies in Agricultural Economics at Ohio State University.

Teck Chin KWON, Senior Agricultural Research Specialist, Farm Management Division Research Bureau, Office of Rural Development, Suwon. M.S. studies in Agricultural Economics at the University of Illinois.

Taiwan

Kuo-shiung HUANG, Teaching Assistant, Department of Agricultural Economics, National Taiwan University, Taipei. Ph.D. studies in Agricultural Economics at the University of California, Berkeley.

Po-chuan SUN, Senior Specialist, Taiwan Provincial Water Conservancy Bureau, Taipei. Ph.D. studies in Agricultural Economics at the University of California, Davis.

Chieh-hsien TSENG, Instructor, Department of Agricultural Economics, College of Agriculture, Taiwan Provincial Chung Hsing University, Taichung. M.S. studies in Agricultural Economics at Ohio State University.

Thailand

KAMPHOL Adulavidhaya, Lecturer, Department of Agricultural Economics, Kasetsart University, Bangkok. Ph.D. studies in Agricultural Economics at Purdue University.

Udom KERPPIBULE, Department of Economics and Business Administration, Kasetsart University, Bangkok. Ph.D. studies in Agricultural Economics at the University of Wisconsin.



Photo, Robin Pell, AID, Viet Nam

A/D/C Acting Director, Dr. Wharton, as a member of the U.S. Presidential Mission on Agriculture to Vietnam, explores the market place of Long Xuyen.

NON-DEGREE STUDY

Japan

Toshihiko ISOBE, Chief, Research Staff, National Research Institute of Agriculture and Forestry, Tokyo. Post-doctoral studies in Agricultural Economics at Cornell University.

South Korea

Jong Yall KONG, Chief of Farm Management Extension Workers, Office of Rural Development, Province of Kyung-gi Do. Non-degree studies in Farm Accounting at Kyoto University.

SUPPLEMENTARY SUPPORT

India

Satish Chandra JHA, Indian Society of Agricultural Economics, Mahatma Gandhi Road, Bombay. Ph.D. studies in Agricultural Economics at the University of Illinois.

Japan

Yoshiharu KUBO, Assistant Professor, Dairy Science Department, Obihiro Zootechnical University, Hokkaido. Post-doctoral studies in the Department of Agricultural and Food Economics at the University of Massachusetts.

Sachiko YAMASHITA, Faculty of Agriculture, Hokkaido University, Hokkaido. M.S. studies in Consumption Economics at the University of Minnesota.

Philippines

Wilfredo ARCE, Resident Anthropologist, Notre Dame of Jolo College, Institute of Philippine Culture, Ateneo de Manila, Manila. Ph.D. studies in Anthropology at Cornell University.

Sylvia H. GUERRERO, Department of Agricultural Economics, University of the Philippines, College, Laguna. Ph.D. studies in Social Psychology at the University of Wisconsin.

Alejandro A. MARALIT, Acting Provincial Development Officer, Presidential Assistant on Community Development. M.S. studies in Regional Planning at the University of Wisconsin.

Vicente A. QUITON, Research Assistant Instructor, College of Agriculture, University of the Philippines, College, Laguna. Ph.D. studies in Agricultural Education at the University of Illinois.

South Korea

Sung Hwan BAN, Assistant Professor, College of Agriculture, Seoul National University, Suwon. Ph.D. studies in Agricultural Economics at the University of Minnesota.

Il Chul KIM, Instructor, Soong Sil College, Seoul. Ph.D. studies in Rural Sociology at the University of Wisconsin.

Taiwan

CHEN Chin-wen, Chief, Agricultural Extension Division, Taiwan Provincial Farmers Association, Tali, Taichung. M.S. studies in Extension Education at the University of Wisconsin.



Dr. Lewis and Professor Shim open the 1966 summer course on Agricultural Marketing Research Methods in Suwan, Korea.

paper

A SEMI-NOMADIC FARM FAMILY*

(From the Arid Zone of Rajasthan)

by N. S. JODHA†

Introduction

This study of a semi-nomadic arid region farm family from Rajasthan, India, illustrates how chronic water shortage and recurrent famines are basic to the agricultural activity in the region. The cultural practices followed may appear at first view to be too primitive, but often are the outcome of centuries of adaptation to a peculiar and difficult physical environment. Among the limited number of crops that can be grown crop failures occur at least twice in five years. Livestock raising, the other available alternative, generally converts into a nomadic or semi-nomadic pursuit, when drinking water and pasture are scarce. Yet subsistence farming and stock herding are the principal sources of livelihood.

*The author is grateful to Prof. J. P. Hrabovszky, former A/D/C Visiting Professor at the Indian Agricultural Research Institute, New Delhi, India. But for his keen interest, constant encouragement and regular guidance this study would not have been possible.

†Technical Assistant in the Human Factor Studies Division of Central Arid Zone Research Institute, Jodhpur, India.



Mr. Singh with a young Marwari lamb.



View of the half constructed house of Mr. Singh, the fodder reserves behind it and the fields of the village.

The Village

Landscape: The farm family described in this paper belongs to a village named Khanwar in Nagaur district of Rajasthan. Nagaur was part of the former princely state of Jodhpur which was merged into the Indian Union after independence. Except for sand dunes, the village exhibits all the characteristics of arid land, e.g., shortage of moisture, wide fluctuations in temperature, stormy winds and sparse vegetation. The soil of the village is partly gravelly and partly sandy to sandy loam. The average rainfall is 25 cm per year which occurs only in the monsoon period July to September. The mean temperature ranges from 3.0°C minimum to 45.0°C maximum. There is no rich vegetation. Besides some local bushes like *Caparis aphylla*, *Zizyphus nummularia*, *Acacia hamata*, and *Clerodendron phloemoides*, one finds a few clusters of *Acacia arabica*, *Prosopis spicigera* and *Innogiesis cornuta* near water sources like village ponds and wells.

The village is a very small one, consisting of 100 households in all. It is surrounded by seasonally dry water ponds, community threshing grounds, and fast

shrinking permanent pastures beyond which are the almost denuded forest reserve areas.

Community facilities: There is no road connection for this village. To reach the nearest paved road point, the bus stop, the post office, the dispensary, the middle school and the retail market, one has to go over a two-mile long sandy track. The nearest railway station, police station, telegraph office and the *Mandi* (wholesale market) are twelve miles away from the village. Being too small, the village has no separate village *panchayat*¹ of its own. It elects two members for the common village *panchayat* with another nearby village. There is no provision of street lanterns and filtered water supply.

Water supply: The *Naadis* (village ponds) are the chief source of water supply in the village. There are about eight water ponds with their water retention

¹ *Village panchayat* is a democratic institution of local government for Indian villages. The elected members, called *Panch*, look after the administration, welfare and development of the village.

capacity varying from two months to twelve months depending upon their location and type of soil as well as the intensity and timing of rains. Men and animals use them together. They are situated in such a way so as to ensure water supply to the *Abaadi* (village settlement), and the cultivators working in different farm areas. By virtue of their peculiar spatial distribution they also ensure equitable incidence of grazing through rotational grazing on different pastures. They are maintained through mutual cooperation of the villagers as well as the government's famine relief measures.

When the *Naadis* dry up the village depends on the community well. It is the solitary well in working order and was constructed at the time of the settlement of the village. It is operated by some villager on a contract basis. Each villager, even when he is residing outside the village and has not tasted a drop of water in a particular year, will have to pay the water charges. The married daughters of the village with their children and the family of the village priest are always exempted from payment of water charges.

The Family

The head of the family is Mr. Sultan Singh aged 49. By caste he is Rajput. Besides being a cultivating caste, Rajput was a ruling caste until recently and still is one of the dominant castes in this region. Mr. Singh's is a joint family. The joint family in this context means the living together of the parents with their

married children. Irrespective of their place of stay and type of work, each of them contributes to the family living pool according to his capacity. They have common ownership of family assets and equal obligations towards liabilities. The eldest male member is the head or the final authority responsible for all the family affairs, be it marriage or litigation.

Size: There are fourteen members in Mr. Singh's family. This is a quite normal size for the joint families in this area. Besides himself and his wife, Mr. Singh has three married sons aged 30, 27 and 20 years. He has three grandsons, aged 5, 3 and 1 years and three granddaughters aged 10, 6 and 2 years. His twenty-two year-old daughter is married in a village about 200 miles away from this village. She frequently visits her parents.

Literacy: Mr. Singh has no formal education, but he can manage his affairs with whatever reading and writing he knows. His elder sons have finished their schooling 5 and 3 years back, and are now employed in government service and live in the town of their employment. However, their wives, following the time honored tradition, stay mostly in the village itself. His youngest son who assists him in farming has studied up to primary level. Except one daughter-in-law, all the ladies in Mr. Singh's family are completely illiterate. Customarily, people did not educate the girls in his caste. But Mr. Singh, like many others, has enrolled his eldest granddaughter in the village primary school. But this school, like many other village schools, unofficially ceases to function during cultivating season for the want of students, who are engaged in assisting their parents as baby sitters or graziers.

Work force: Only male adults constitute the work force of Rajput families. Owing to the *Purdah* system, a custom prevalent among Rajputs, ladies cannot move out of the house, and so they do not work in the fields. Since out of the four male earners two are employed outside, Mr. Singh's family work force is reduced to two. The sons in service contribute to the joint family earnings, and their very absence has considerable effect on Mr. Singh's household economy and on his preference for particular farm enterprise combinations.

In spite of the somewhat adverse effects on his farm enterprise, Mr. Singh prefers the outmigration of his sons for some well-founded reasons. He feels that being highly educated (viewed from village standards)



View from the top of the house towards the village proper and the village pond nesting among the trees.



The shepherd with the sheep and goats.

they are considered as misfits for agriculture. Secondly, their off-farm employment is a higher-return alternative use for the investment in their education and it appears to be the best utilization of their skills and knowledge. Moreover, for the purpose of manual labor, any cheap hired laborers can substitute for them. For advice in making decisions, they are always at Mr. Singh's disposal, even when living and working in town. Thirdly, such outside employment provides the family with a more stable source of income which is not affected by drought or crop failures. Besides, having any of the members in government service is considered as a status symbol in the village community. It also adds to the credit-worthiness of the family in the village money market.

Housing: In general, the houses in the village are made from the rough stone available in a local gravelly area. No bricks are used. The household accommodations may vary from a multipurpose single room to a big house with three or four rooms. Poor people use cow dung and mud for plastering and flooring. For making roof they use *Bajara* (*Pennisetum*) stalks. The well-to-do have their houses made of all stone. For plastering, flooring and roofing lime or gypsum (locally available) are used. Recently some people have been

importing costly sandstone from Jodhpur about 100 miles away. Dry bush fencing is used as a compound wall in the majority of the households.

Until recently, Mr. Singh lived with his brothers in a stone-made fifty year-old ancestral house. He has now constructed a new house, at the cost of more than Rs.10,000. Besides lime and cement, the Jodhpur stone has also been used. The new house, representing the general trend, is quite open and spacious. It contains some novelties (e.g., bathroom, drawing room, etc.), compared to traditional houses in the village. Every part of the house including kitchen, bathroom and store are in triplicate, so as to accommodate each family during the eventual disintegration of the joint family. Mr. Singh has a *Payagan* (pucca cattle shed), which he shares with his other brother. The *Tanka*—a cement covered pool for storing rain water for family consumption—is also the common property of the brothers. Since Mr. Singh built this *Tanka*, he has been able to get rid of guineaworm infection in the family. This prominent disease in the countryside incapacitates large numbers of people during the cultivating season and is said to be caused by use of contaminated and unfiltered water of *Naadis* and wells.

Economy of the Family

Land holdings: Mr. Singh has 58 acres of land in all, which is a little above the average size of holding in the village. Of the total, 25 acres of land were inherited as a one-seventh share of his father's 175 acres of land. The rest of the land, 33 acres, was purchased after leaving the old joint family. Mr. Singh's land is scattered in 13 fragments. The distance of fragments from his residence ranges from $\frac{1}{4}$ to $2\frac{1}{2}$ miles. Size, quality of soil and distance from the village of individual plot is given in Table I. All the land is single cropped. There is no provision for irrigation in the village. Cultivation depends solely upon rainfall which is very low and uncertain.

Crops: Mr. Singh's village forms the part of the tract called *Suhalag*, a name traditionally given to the area where, compared to the extreme desert areas, greater prosperity prevailed. Pearl millet, sorghum and sesame are the main crops in the village. Pulses such as *Phaseolus aconitifolius*, *Phaseolus vadiatus*, *Cyamophis tetragonoloba* are also grown. Except sesame, all are basically subsistence crops which provide both food and fodder. It may be noted that, besides purely subsistence considerations, the timings and intensity of the rains determine the cropping pattern in this area. If the monsoon is early, the pearl millet and sesame

TABLE 1
PARTICULARS ABOUT LAND HOLDING

| Plots | Area (acres) | Type of soil | Revenue rate per acre Rs. | Date of acqui- sition | Distance from village (miles) |
|-------|-----------------|-------------------------|---------------------------------|-----------------------------|-------------------------------------|
| 1 | 6.5 | Sandy (grey brown) | 2.67 | Inherited | 2 |
| 2 | 3.2 | Sandy (grey brown) | 2.67 | Inherited | 1 |
| 3 | 3.2 | Sandy (grey brown) | 2.67 | Inherited | 1/2 |
| 4 | 2.4 | Sandy (grey brown) | 2.67 | Inherited | 1/2 |
| 5 | 6.9 | Sandy (grey brown) | 2.67 | 1955 | 2 |
| 6 | 2.2 | Sandy (grey brown) | 2.67 | 1957 | 1/2 |
| 7 | 2.9 | Sandy loam (black soil) | 2.80 | 1955 | 1/4 |
| 8 | 2.4 | Sandy loam (black soil) | 2.80 | Inherited | 1/4 |
| 9 | 3.2 | Gravelly (Magara land) | 2.02 | Inherited | 1 |
| 10 | 3.6 | Gravelly (Magara land) | 2.02 | Inherited | 2 |
| 11 | 4.0 | Gravelly (Magara land) | 2.02 | Inherited | 2 |
| 12 | 3.2 | Gravelly (Magara land) | 2.02 | 1956 | 1 1/2 |
| 13 | 13.2 | Gravelly (Magara land) | 2.02 | 1957 | 2 1/2 |
| 13 | 56.9 | | | | |

will dominate. Sorghum and pulses will be preferred when the rains are late. Crop rotation, to the extent it is permitted by rains, is also a general practice. Late but good monsoon rains generally result in relatively large scale dry farming based on residual moisture. Wheat, gram and mustard are grown without any irrigation when there are good rains during late August and September.

Fodder: There is no general practice of growing grasses with deliberate efforts because farmers do not consider grass as a crop. Except sesame, every crop grown provides fodder for livestock. Sorghum stalks are popular fodder for cattle. The finer fodder from pulses is stored and fed to the draft cattle at the time

of cultivation or to milch animals during lactation period. Pearl millet stalks are poor man's fodder. *Prosopis spicigera* and *Zizyphus nummularia* are also serving as sources of fodder which grow even during years of extremely low rainfall. Various types of grasses from private fallow lands and field borders are also collected during harvesting season depending upon the spare time permitted by the regular crops of the season and their availability.

Farm practices: In a good monsoon year the cultivating season lasts for about eight months. According to a general pattern it starts with *soor* (annual cleaning of bushes from the field); summer plowing and manuring of the dry fields in the months of May and

June. Use of fertilizers and green manuring is not in practice. Simple farmyard manure is used. Penning of sheep and goats in the fields and fallowing (resting) of part of the land for automatic rebuilding of soil fertility are also popular.

If there are rains with regular weekly intervals, tilling and sowing operations last from July to late August. Line sowing is a popular method. Bullock- and camel-drawn wooden plows are used. Recently, tractor hiring has also become very popular. During the months of August and September weeding operations take place. Besides manual weeding, interculture is also practised in the case of pearl millet and sorghum. They do not know of any methods for pest control except using the smoke from burning camel bone around the field.

The harvesting operations, including cutting of grass, begin in early October and last until early December. Sometimes owing to the rumored or actual fear of locusts, the unripe crops are collected. The last of the cutting operations relates to the collection of fodder and fencing material from *Zizyphus nummularia*. The harvest is collected at one place, generally near the water pond, and threshing takes place on mud-plastered threshing grounds.

In all these farm operations generally family workers do the work. Sometimes villagers practice mutual exchange of labor. Unlike many, Mr. Singh gets most of the work done by hired labor, because he is short of family workers. Mr. Singh is always there, not only to supervise but also to actively lead the laborers in different activities on the farm. In the tilling of fields Mr. Singh is assisted by his youngest son and one hired laborer. In addition to one bullock-drawn plow and two camel-drawn plows, at present, the hiring of tractor work is also used to till the soil if and when the circumstances warrant. While in the family there is nothing like a water-tight division of labor, generally Mr. Singh looks after the cultivation, while his youngest son manages the herd of sheep. His sons in government service also come and assist him during the busy season.

The hired laborers are paid both in cash and kind. At times some piece of work is given on a contract basis to a group of laborers. Sometimes Mr. Singh also arranges the *Lhash*: a traditional form of rural cooperation, where one or more members of various families join hands in an attempt to complete a particular piece of farm work for an individual in the



The family flock of sheep grazing in the fallow lands.

shortest possible time. The owner of the work reciprocates through supplying very rich food to the participants. The occasion is also graced by the presence of drummers who enthuse the workers at every step.

Regarding improved farm practices, Mr. Singh is very particular, right from the beginning, about manuring of the fields with his own sheep manure, summer plowing, and weeding. More than half of his fields have bunding ranging from 2 to 5 feet in height. Summer plowing and bunding are considered necessary to better conservation of the scant rain by checking runoff and acting as windbreaks. Mr. Singh is not optimistic about the suitability of outside improved seed in this area. Local seeds are preferred.

Farm implements: In addition to its impact on farm efficiency, the stock of farm implements is considered as a status symbol in this region. Sometimes the possession of major implements plays a decisive role in marriage settlements. In spite of the penetration of mechanization, particularly in operations like tilling, threshing, chaff cutting and transportation, the traditional implements and tools with their refined designs and lower costs are preferred.

Mr. Singh is one of the well-off farmers in the village as far as the possession of traditional implements and tools is concerned. He has two bullock carts—one with wooden wheels and another with rubber tires. The latter is a comparatively recent introduction in this area. He has four indigenous wooden plows of which two are bullock-drawn and two are camel-drawn. He has a bund former and a *ramp*, the major implements used for land preparation, reclamation and bunding of fields. Besides, Mr. Singh has a large inventory of hand-tools to fit the plow or cart and those used during harvesting of the crops. Table 2 gives the detailed information about farm implements.

Livestock

The perpetual uncertainty in agriculture of this region, caused by low and uncertain rainfall, induces the farmers not to keep all their eggs in one basket. Whether smaller or greater, some degree of diversity in resource use is visible in the case of almost every farmer. Under the existing circumstances livestock raising appears to be the best enterprise to complement crop raising.



The tools used. Explanation below:

(1) Bucksrape made of split bamboo; (2) a, b sowing tubes to be used with plow; (3) desi plow, wooden with steel tip; (4) mattock for clearing bushes; (5) wooden pitchfork; (6) cutting tools for *pala* harvest; (7) sickles; (8) *pawla*, short handled hoe-like shovel; (9) yoke for bullocks; (10) rolled up leather water bag, used for drinking water.

TABLE 2
AGRICULTURAL IMPLEMENTS AND TOOLS

| Item (No.) | Date of acquisition | Purchase cost (Rs.) | Use/Description |
|-----------------------------------|---------------------|---------------------|---------------------------------------|
| 1. Bullock carts | | | |
| a) with rubber tire (1) | 1958 | 900/- | Transportation |
| b) wooden tire (1) | 1941 | 200/- | Transportation (it is now surplus) |
| 2. Ramp (<i>Bhakar</i>) (1) | 1952 | 60/- | Land reclamation, soil preparation |
| 3. Bund former (1) | 1954 | 35/- | Bunding, leveling |
| 4. <i>Sinwar</i> (1) | * | 15/- | Leveling and moisture conservation |
| 5. Wooden plow (4) | * | 2 to 30 each | Tillage |
| 6. <i>Khardi</i> (2)** | 1959 | 250/- | Carrying crops, fodder, etc., on cart |
| 7. <i>Jhools</i> (2)** | 1955 | 60/- | Covering bullocks during cold |
| 8. Inventory of hand tools, e.g.: | * | 200/- | For different farm operations |
| a) Axes (2) | | | Cutting bushes, trees, etc. |
| b) Spades (4) | | | Digging, leveling, bunding |
| c) <i>Kashi</i> (5) | | | Cleaning, weeding, harvesting |
| d) <i>Jharbadh</i> (4) | | | Cutting and preparing fodder |
| e) <i>Chalana</i> (2) | | | Separating forage and grain |
| f) <i>Chajala</i> (2) | | | Separating forage and grain |
| g) <i>Datala</i> (5) | | | Cutting the crops |
| h) Ropes (8) | | | Made from cotton, camel and goat hair |

* These items are replaced within 2 to 5 years depending upon intensity of use.

** These items are made from camel and goat hair.

Mr. Singh has tried his hand in almost all types of stock raising relevant in this region: cattle raising, camel raising and sheep and goat raising. In the beginning he used to raise cattle. Subsequently, as circumstances changed, he had to switch over to camel raising and sheep and goat raising.

Cattle raising: Village Khanwar is part of the *Suhlag*, the birth place of *Nagauri* breed of cattle. This breed is purely of draft type. The bullocks are considered the best trotters. They are famous for their great stamina, speed and sure-footedness while working in moderate and heavy soils. In the year 1940, when he separated from his other brothers, Mr. Singh received 36 cows as his share. Out of these he could raise two to four bullocks ready to be sold in the cattle fair every year. The cows with male calves were never milked. Three months before the cattle fair

the 3 or 4 year-old bullocks were given special attention including their feed and regular bathing. Generally they were not broken to the yoke, lest they lose their aggressive smartness, considered to be a positive factor to impress upon the customers. Mr. Singh visited several cattle fairs including those arranged outside Rajasthan, i.e., Punjab State. Punjabi farmers prefer *Nagauri* bullocks for their sturdiness and fine appearance. Mr. Singh has a record of selling a homebred single bullock for Rs.1,300/- in those times, when an ordinary pair of bullocks sold for Rs.1,200 to 1,600/-.

With sufficient grazing lands available and home produced fodder and concentrates, Mr. Singh could easily maintain such a big herd of cows. Occasionally, due to scarcities of water and fodder he had to outmigrate with other fellow herdsmen towards *Malwa*, a somewhat more humid and prosperous region in Central India, 300 to 500 miles away (normal travel

The modern type of bullock cart with rubber tires. Container for carting loose fodder is woven from goat hair.



rate is 15-20 miles/day) from his native place. There they could graze their stock free of charge and earn their living too. Between the years 1940 and 1953 Mr. Singh had to move out six times with his cows.

With the commencement of land reforms (1952), the *Jagirdari System*, i.e., a feudal system of land ownership and village administration, came to an end and so did the institutional arrangements, both formal and informal, which protected the community grazing lands. Besides the shrinkage of grazing areas, the traditional cooperative life of the community was also adversely affected by some unfortunate after effects of the *Jagir*¹ abolishment. Factionalism has rapidly increased in the life of the village. Outmigration in a cooperative group became almost impossible. The system of *Chopadar* (common herdsman for the whole village) came to an abrupt end. Maintenance of the quality bull through mutual cooperation and contribution in kind of all the villagers ran into trouble. Finally a situation arose where everybody's business became nobody's concern.

Besides changes in the institutional environment, some subjective factors, like Mr. Singh's inability to get a suitable grazier, and due to some disease one year resulting in the loss of six adult cows, representing a big capital loss, prompted him to reallocate his resources to new livestock enterprises.

Looking at the better market prospects and comparatively lower costs of raising sheep, Mr. Singh felt inclined towards trying out this new venture. In this enterprise, besides costs/returns considerations, the dependence on institutional arrangements, which were so fast falling prey to the increasing factionalism in the village, was insignificant. The substantial extent of *Magara* land (gravelly area), comprising about one-eighth of the total area of the village land, could provide sufficient grazing for his sheep for some parts of the year. These gravelly lands are submarginal both for cattle grazing and for crop cultivation. However, the biggest hurdle was of an institutional nature. Hitherto sheep and goat raising was considered as a "degraded" occupation, generally patronized by lower castes like *Raikas* and others.

Camel raising was another livestock alternative, where one did not have to bother about institutional

arrangements or space for grazing.

Camel raising: Raising sheep together with goats, and camel raising were the two possible alternatives and Mr. Singh decided to avail himself of both of them. He brought six female camels from a distant place in 1953. He kept them for three years, but could raise only two additional camels. He discovered with great disappointment that camel raising requires more than mere reliance on the thorny bushes on the outskirts of the village. Those who move out towards better grazing opportunities reap greater returns. However, Mr. Singh never outmigrated with his camels. Gradually he reduced the number of camels from six to three. At present, he keeps only two camels which are for draft purposes rather than breeding.



The male camel of the family harnessed for plowing.

Sheep and goat raising: Side by side with his camel enterprise Mr. Singh decided to take up sheep raising. In April, 1954, he purchased 85 goats, mainly to train his youngest son. This he has done, because the grazing of goats is an exercise in hardship for a novice. One who can manage the herd of goats feels no difficulty at all in grazing sheep. In September, 1954, in spite of fairly strong opposition by some of his kin members, he acquired 200 sheep at the rate of Rs.17/- (approximately \$3.50 each).

¹ According to the feudal order, as prevalent in this region, the *Jagir* symbolized the almost exclusive political rights and privileges of the landlord on a given village. *Jagirs* were won as a reward for the show of valor and sacrifice in the battlefields. The *Jagirdar* had to contribute soldiers from local militia and a nominal part of the land revenue to the ruler of the princely state. For other purposes he was an autonomous ruler.

Sheep raising was an entirely new venture for Mr. Singh. Never before had he any connection with this enterprise. Despite certain initial setbacks, the enterprise is flourishing as a chief subsidiary occupation of the family. Detailed information about the sheep herd is presented in Table 3.

The raising of cattle has been curtailed as a result

of his reallocation of resources. Ever since Mr. Singh took up sheep raising, the cattle raising enterprise has declined. Since five years he does not own a single cow. The only cattle in his possession are bullocks for draft purposes. Two female buffaloes are kept for milk for home consumption.

TABLE 3
PARTICULARS ABOUT THE HERD

| Year | Number | | Sale during last year (No.) | | Lost during last year (No.) | |
|---------|--------|-------|-----------------------------|-------|-----------------------------|-------|
| | Sheep | Goats | Sheep | Goats | Sheep | Goats |
| 1953-54 | 250 | 85 | Nil | 10 | — | — |
| 1954-55 | 250 | 100 | 50 | 20 | 20 | — |
| 1955-56 | 260 | 25 | 55 | 100 | 30 | — |
| 1956-57 | 320 | 30 | 45 | 10 | 40 | — |
| 1957-58 | 320 | 50 | 60 | 20 | 80 | — |
| 1958-59 | 290 | 50 | 55 | 10 | 45 | — |
| 1959-60 | 400 | 40 | 70 | 30 | 30 | — |
| 1960-61 | 350 | 45 | 35 | 10 | 120 | — |
| 1961-62 | 380 | 40 | 50 | 25 | 70 | — |
| 1962-63 | 500 | 50 | 40 | 15 | 80 | — |
| 1963-64 | 415 | 55 | 30 | 20 | 120 | — |
| 1964-65 | 300 | 30 | 130 | 35 | 110 | — |

- Notes:
1. The number includes all sheep/goats including young stock. Their population is maintained by natural growth itself, except in the year 1960-61, when 80 sheep were purchased.
 2. Number of animals sold includes male sheep/goats. Females were never sold except 80 goats in the year 1955-56, and 73 sheep in the year 1964-65.
 3. Loss of animals includes all the animals who died. The death rate is surprisingly high at times, mainly due to heavy incidence of lamb and kid mortality particularly in the extreme cold months of December and January and in extreme scarcity period of May-June. Adult sheep also die in large numbers when the herd is attacked by certain seasonal diseases.
 4. The death rate in goats is very low. Their number does not exceed 5 to 7 in a year.



The common wooden-wheeled bullock cart of the family.

Sheep management practices: More than a decade of sheep raising has imparted valuable experience to Mr. Singh's family. They have evolved their own methods of sheep management, which concern every aspect of sheep raising right from effective grazing to effective breeding.

Grazing: Effective grazing, according to Mr. Singh, involves frequent changes in grazing arrangements, i.e., changing the number of graziers (at present three) and sub-division of herd on the basis of age, sex, lactation period and type of stock (sheep or goats). These changes are necessitated by the varying degree of availability and distance of fodder and water.

Grazing is not confined to his own fields. After the harvesting is over, one can graze his stock anywhere he likes. However, such a practice of uncontrolled and unrestricted grazing causes serious problems for soil conservation in this region. In order to avoid the exhaustion and the danger of infection, Mr. Singh keeps his sheep in the field even during the nights after the harvesting of crops. Stall feeding is rarely done.

Bacterial, virus and parasitic diseases sometimes inflict heavy mortality on the flock. Mr. Singh, like others, does not have much faith in veterinary measures provided by the government. They rely on their indigenous cures evolved through trial and error.

Though the goats generally disturb the concentrated grazing of the herd, and income from them is considerably lower than from sheep, yet a fair number of them is indispensable for the herd. Besides feeding the orphan lambs and supplying milk to shepherds

during nomadic movements, they lead the herd where the grazier wants to take it. They raise an alarm whenever the herd is attacked by wild beasts.

Breeding: Though sheep can conceive twice a year, in the interest of the health of the herd, Mr. Singh avoids this practice. He feels that perpetual poor health adversely affects the breed of the sheep in the long run. Breeding is allowed once a year with utmost care exercised so that the lactation period should not coincide with fodder and water scarcity or timings of outmigration. He keeps one quality ram per 50 sheep. The breeding rams are given additional rich feed. They are colored in rosy-red (except legs and neck) during the breeding season so as to make them more attractive for the ewes as well as to mark the bred ewes. His herd is of the Marwari breed of sheep. They are black-faced, having short and twisted ears, weighing on an average about 60 pounds. They possess high resistance to drought and disease. Each sheep produces 2 to 4 pounds of washed wool per year of medium coarse type.

Outmigration: When there is a paucity of fodder in his own village, Mr. Singh, like other sheep raisers, moves to the nearby villages if there is sufficient fodder and water. Failing this, they move out of their own locality, generally in the month of March, and cover long distances ranging from 200 to 500 miles. Ever since Mr. Singh adopted sheep raising, with the exception of 1962, he has always been out towards Jaipur, a distance of about 250 miles. Some people even reach the canal-irrigated areas in U.P. and Punjab. They re-

turn with the herds in June or July when there is sufficient rain in the village. While the herd is out, besides his son, two additional hands are engaged. Mr. Singh occasionally visits them.

In order to ensure security, coordination, and mutual cooperation, more than two herds make a unit for out-migration. Camels and donkeys are used as pack animals. Sometimes herdsmen get free food and water from local people in return for folding their flocks on their fields. At other times they are harassed by thieves, especially when there are stormy winds. At some places the local people also exploit them by taking unduly heavy water charges at the rate of Rs.10/- to 20/- per hundred sheep (per month), as compared to Rs.5/- to 10/-, the rate prevalent for the community well of their own village. In recent times, especially since 1961, at some places income-hungry village *panchayats* have created some problems. They try to extract something from each herd on the pretext of unauthorized trespassing.

Marketing

Livestock: Mr. Singh used to sell his bullocks in cattle fairs, but sheep and goats are sold to visiting traders. As a matter of principle, he does not sell the female sheep and goats. Male sheep and goats, aged 2 to 3 years, are sold. Their prices vary from year to year depending mainly upon the general health of the herd and the incidence of disease. Last August Mr. Singh sold the castrated 2 to 3 year-old rams at Rs.30/-.

Livestock produce: Wool is also sold to visiting traders, sometimes through forward contracts. Formerly it was sold unwashed, but since 1960, Mr. Singh, like many others, has started washing the sheep before shearing them. The shorn wool is not graded for sale.

Generally, the sheep are shorn twice a year in August and in early March. In a year of good monsoon and free of disease, they have shorn even three times. The wool is short and of a rough quality, used mainly in carpet making. The prices of wool vary from season to season and individual to individual, indicating variable and inadequate market arrangements. Last August Mr. Singh sold it at the rate of Rs.218/- per maund of washed wool. (According to post-devaluation rates approximately 35¢ US per pound.)

The hair of the goats is never sold. It is used for making articles like rope, *Kharadi* (mats) and others required by a farmer. Wool is the only livestock produce sold by Mr. Singh. Manure, milk and *Ghee* (butter) are never sold. They are produced only for home consumption.



Winnowing and sieving bajra.

The crop produce: Produce from the crops is generally sold to visiting traders. Except for the annual requirement plus some provision for the uncertainties of the next year, all of the produce is marketed. However, such surpluses are possible only during a good monsoon year, which is roughly once in four or five years. Table 5 reveals this fact. The nearest *Mandis* (wholesale markets) are 12 and 14 miles away from this village. Mr. Singh does not prefer to sell in these *Mandis*, because besides involving transport charges, it adds to the bargaining power of the buyer.

In recent years Mr. Singh's financial capacity for holding his produce has increased substantially and he has practiced it. He withheld a big amount of sesame and moong in the year 1962. In this venture he suffered a big loss. Fine sand and ashes, commonly used as insecticides, failed to protect the stored grains properly. He could sell only half the amount at a not very high price. He decided not to repeat it in future. He feels that with his limited experience and knowledge about market trends he is bound to lose in such ventures. As a result, in the year 1965 he sold some varie-

ties of produce just after their harvest, which fetched him Rs.10/- to 15/- (per maund) less than what others received only three months later which is 25 to 37 percent lower than average prices.

Surplus fodder: He also sells some surplus fodder. Generally coarse fodder has no buyers except during famine years. It is stored in a careful manner so that wind and water cannot spoil it for years. The fine fodder he produces from the straw of pulses, etc., has many buyers among both cultivators and traders even in ordinary years.

Income and Expenditure

Income: Mr. Singh has three sources of income: (a) income from crop raising; (b) income from sheep and goats; (c) remittance from his sons working outside. The first one is as uncertain as the monsoon. After meeting the farm costs, mainly labor charges, in most years, the remaining agricultural produce barely meets the subsistence requirements of the family. Moreover one cannot expect any uniform annual farm income for any cultivator in this region, because not even two out of five years will have an average yield. As shown by Table 5, the yields fluctuate between the amount sufficient for two years' subsistence at the top down to zero.

Income from the second source is also strongly influenced by weather and biological factors, but this enterprise offers opportunities for greater adjustment and through seasonal outmigration some degree of certainty can be added to livestock yields. On an average, the gross yield from sheep and goat raising is Rs.3,300/- per year, out of which almost half goes to expenditure to meet the cost of labor in the form of



Carting home the dried thorn bushes of *Zizyphus nummularia* to be used for fences.

cash payments, food, shoes and clothes, and the cost of outmigration. Thus, roughly Rs.1,600/- is the annual net income from this enterprise. Details are presented in Table 4.

The third source of income, i.e., remittance, is not subject to uncertainty. But as Mr. Singh complains, owing to the urban influence, his sons have forgotten the rural austerity. Consequently, taken together they are hardly able to save more than Rs.200/- per month on an average.

TABLE 4
INCOME AND EXPENDITURE FROM
SHEEP AND GOAT RAISING

| Income | Rs. | Expenditure | Rs. |
|---------------|----------|--|-------|
| Sale of wool | 1,800 | Payment to graziers: | |
| Sale of stock | 1,500 | Cash | 600 |
| | | Kind | 450 |
| | | Cost of outmigration | 300 |
| | | Miscellaneous | 300 |
| | | (cost of fodder, water, shearing, penalties, etc.) | |
| Total | 3,300 | | 1,650 |
| Balance | Rs.1,650 | | |

- Notes:* 1. The statement is based on annual average performance during last five years. It is prepared from the rough accounts maintained.
2. The expenditure does not include reward of family workers.



The pachaasa way of storing fodder for lean years.

TABLE 5
PARTICULARS ABOUT CROP YIELD

| Year | Area cultivated (acres) ¹ | Yield (mds.) ² | Yield mds./acre |
|---------|---|---------------------------|------------------|
| 1960-61 | 53.7 | — | — |
| 1961-62 | 53.7 | 120 | 2.2 |
| 1962-63 | 50.7 | 60 | 1.1 |
| 1963-64 | 12.9 ³ | 15 | 1.2 ⁴ |
| 1964-65 | 50.5 | 300 | 5.9 |

- Notes:*
1. The land actually cultivated is somewhat less than the land possessed, because some part of the land remains uncultivated partly due to lack of sufficient rains and partly due to the practice of fallowing or resting of the land.
 2. The yield includes grain produce from different crops
 3. The year 1963-64 was one of the worst famines. Mr. Singh could get this much yield because some of his fields are situated in low lying area and have good bunding.
 4. The yield per acre may be misleading in the cases like this, because the "mds./acre" phenomenon while indicating the annual performance does not take into account the larger part of the land left unused owing to inadequate rains. It is obvious from the data for the year 1963-64.

Most of the time their saving reaches home in such forms as household consumption articles like furniture and clothing, or some articles required for farming, like agricultural implements and tools.

One of the important attributes of this income from outside is its regularity, and thus its availability in some crucial time periods. For instance, at the time of peak agricultural activity, despite the relative seasonal scarcity of labor, one can get as many workers as he likes, provided that he has ready cash in hand. Moreover, in the village where cash is always in short supply, except during a very short post-harvest period, ready cash offers a big opportunity to oblige and to win the people.

Saving and investment: During the last twelve years, on an average, Mr. Singh could save Rs.1,000/- to

1,500/- per year. Up to 1962 part of the savings went to finance the education of one of his elder sons. In addition Mr. Singh purchased new lands which cost him about Rs.3,500/-. About Rs.1,500/- were invested in buying new agricultural implements. In the year 1961, Rs.2,500/- were plowed back for buying 80 additional sheep, all of which, unfortunately, died the same year. These were his investments in production. However, only two years back, he invested about Rs.10,000/- (partly borrowed) in construction of a new residential house. In the years 1961 and 1962, for the marriages of his two sons he spent large sums also.

Future plans: Mr. Singh now contemplates to dig a well in one of his fields. The wells recently dug in some of the nearby villages have proved quite successful. The only difficulty is that he does not have a single plot large enough to be selected for digging the well. Private negotiations regarding consolidation of some plots of his holdings are in progress.

A comparison with other farmers in his area: Though Mr. Singh belongs to the category of somewhat better-off farmers, this does not in any case make this case unique. His situation contains almost all the features of any other semi-nomadic farm family in this region. The only exception or non-representative attributes of this case are: the level of income which is somewhat above the average farmer's income in the area and the excessive reliance on hired labor. In this case 80 percent of the work is performed by hired labor whereas most farmers in the village would not hire more than 5 percent.

The relatively high level of family income can be attributed to the mixed farming and off-farm employment of his two sons. The shortage of family workers stems mainly from the institutional factor of the *Purdah* system among Rajputs, and partly from outmigration of two male earners.

Neither the mixed farming leading to higher income, as in the case of a number of joint families, nor the *Purdah* system reducing the supply of family work force, as in the case of Rajputs, are very uncommon phenomena. But the outmigration to urban employment, affecting the level of income favorably and the family labor force adversely, is undoubtedly not a common feature of the farm families in this area.

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